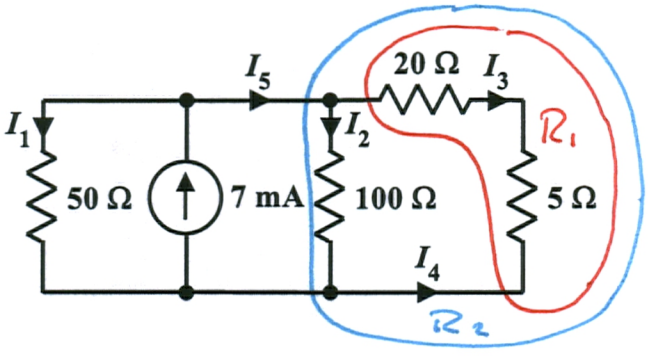
EE 2240

Homework Problem #09



$R_1 = 20\Omega + 5\Omega = 25\Omega$

$R_2 = 100\Omega \parallel R_1 = \dfrac{1}{\frac{1}{100} + \frac{1}{25}} = 20\Omega$

a. Use the current divider equation to determine I_1.

$$I_1 = \frac{\frac{1}{50\Omega}}{\frac{1}{50\Omega} + \frac{1}{R_2}}(7\text{mA}) = 2\text{ mA}$$

b. Use the current divider equation to determine I_2.

$$I_2 = \frac{\frac{1}{100\Omega}}{\frac{1}{50\Omega} + \frac{1}{100\Omega} + \frac{1}{R_1}}(7\text{mA}) = 1\text{ mA}$$

c. Use the current divider equation to determine I_3.

$$I_3 = \frac{\frac{1}{R_1}}{\frac{1}{50\Omega} + \frac{1}{100\Omega} + \frac{1}{R_1}}(7\text{mA}) = 4\text{ mA}$$

d. Determine the value of I_4.

$$I_4 = -I_3 = -4\text{mA}$$

e. Determine the value of I_5.

$$I_5 = I_2 + I_3 = 5\text{ mA}$$